Claims

1. A method for finding neighbors within a piconet, wherein the neighbors are under the control of a single piconet controller, the method comprising the steps

5   of:

determining all nodes under the control of the piconet controller;

sending each node under the control of the piconet controller a message requiring a response;

receiving the response from a plurality of nodes under the control of the

10 piconet controller;

determining which nodes responded to the message; and

formulating a list of neighbors within the piconet based on the determination of which nodes responded to the message.

15 2. The method of claim 1 wherein the step of determining all nodes under the control of the piconet controller comprises the step of requesting, from the piconet controller, a list of all nodes under the control of the piconet controller.

3. The method of claim 2 wherein the step of requesting comprises the step of

20 querying the controller for "roll call" like information via an IEEE 802.15.3 information request command.

4. The method of claim 1 wherein the step of determining all nodes under the control of the piconet controller comprises the step of determining from a

25 broadcast transmitted from the piconet controller.

5. The method of claim 1 wherein the step of sending each node a message requiring a response comprises the step of sending each node a message requiring an immediate acknowledgment.

30

6. The method of claim 1 wherein the step of receiving comprises the step of receiving the response from the plurality of nodes under the control of the piconet controller, wherein the plurality of nodes is less than a number of all nodes under the control of the piconet controller.

35

13

7. A method for finding neighboring nodes within a second piconet while being associated with a first piconet, the method comprising the steps of:

associating a node with the first piconet;

determining a neighboring piconet identification; and

5 broadcasting, by the node, a discovery message during a time slot reserved for transmissions within the first piconet, wherein the discovery message comprises the neighboring piconet's identification, the first piconet's identification, and the identification of the node.

10 8. The method of claim 7 further comprising the step of:

broadcasting, within the message, data requiring an acknowledgment; and

determining those neighboring nodes that responded to the data requiring the acknowledgment.

15 9. The method of claim 7 wherein the step of determining the neighboring piconet identification comprises the step of scanning IEEE 802.15.3 beacon fields to determine neighboring piconets and associated PNIDs.

10. The method of claim 7 further comprising the steps of:

20 monitoring for discovery messages transmitted by other nodes within the second piconet; and

responding to any received discovery message with an acknowledgment.

11. A method for operating a node within a piconet communication system, the

25 method comprising the steps of:

associating the node with a first piconet controller;

becoming a dependent piconet controller ;

determining nodes that associate with the node while acting as the dependent piconet controller;

30 relinquishing piconet control status; and

resuming normal device operation for the node within the original first piconet under the first piconet controller.

12. An apparatus comprising:

14

a transceiver sending each node under a control of a piconet controller a message requiring a response and receiving the response from a plurality of nodes under the control of the piconet controller; and

logic circuitry determining which nodes responded to the message and
5   formulating a list of neighbors within the piconet based on the determination of which nodes responded to the message.

13. The apparatus of claim 12 wherein the transceiver additionally sends a request command to a piconet controller to determine each node under the control of the
10   piconet controller.

14. The apparatus of claim 12 wherein the logic circuitry determines all nodes under the control of the piconet controller by receiving a broadcast transmitted from the piconet controller.
15

15. An apparatus for finding neighboring nodes within a second piconet while being associated with a first piconet, the apparatus comprising:

logic circuitry associating a node with the first piconet and determining the second piconet's identification; and
20   a transceiver broadcasting a message during a time slot reserved for transmissions within the first piconet, wherein the message comprises the second piconet's identification, the first piconet's identification, and the identification of the node.

25   16. The apparatus of claim 15 wherein the transceiver additionally broadcasts within the message, data requiring an immediate acknowledgment, and wherein the logic circuitry determines nodes that responded to the data requiring the immediate acknowledgment.

30   17. An apparatus comprising:

logic circuitry associating a node with a first piconet controller, become a dependent piconet controller, determining nodes that associate with the node while acting as the dependent piconet controller, relinquishing piconet control status, and resuming normal device operation for the node under the first piconet
35   controller.

15